

Appl. No. : 09/871,571  
Filed : May 30, 2001

## AMENDMENTS TO THE SPECIFICATION

**Please amend the following paragraph [0073] as follows:**

[0073] The concept of channel estimation proposed here fits within telecommunication devices as described in U.S. 09505228, now U.S. Patent No. 6,760,300. FIG. 8 shows an architecture of a signal receiving circuit, wherein said channel estimation method fits, a fast Fourier transform circuit (2), a symbol reordering block (3), a time synchronization circuit (4), performing carrier and clock frequency offset estimation, an equalization circuit (5), a demapping circuit (6) and a channel estimation circuit (7), executing the described channel estimation method. Said channel estimation circuit provides channel information (8) for said equalization circuit (5). Said circuit can easily be used also for signal transmitting when a mapper circuit (1) is added.

**Please amend the following paragraph [0080] as follows:**

[0080] It is important to note that channel estimation must not be confused with carrier and clock offset estimation. More in particular, in the telecom device shown, said determining at and in the receiving peer happens on said reference tones, being corrected for carrier and clock frequency offsets. Hence said channel estimation happens after carrier and clock frequency offset correction. Note that FIG. 1 shows a representation of an OFDM system, wherein the telecom devices, shown in FIG. 8, fit. Indeed said devices can be used both at the transmitting side 25 (left side of FIG. 1) and the receiving side 35 (right side of FIG. 1). The information (8) provided by the channel estimation circuit (7) are the channel value  $h[0], \dots, h[N-1]$ , with N here the amount of carriers in the channel. The equalization boils down to the complex divisions, as shown in FIG. 1. The concept of channel estimation proposed here uses frequency pilots to estimate the frequency response times and is based on a particular non-iterative linear estimation of the channel responses, further enabling frequency domain channel equalization. The derived least mean square approach explicitly exploits the finiteness of the channel impulse response.

Appl. No. : 09/871,571  
Filed : May 30, 2001

**Please amend the following paragraph [0096] as follows:**

[0096] Note that power-optimized FFT circuitry, as disclosed in U.S. 09613181, now U.S. Patent No. 6,591,284, can be used for said FFT and IFFT circuits needed for the channel estimation and preferably also for the FFT block in the reference tone capturing means.

**Please amend the abstract as follows:**

This invention relates to a method and apparatus for channel estimation. A method of determining a maximum likelihood frequency domain estimate of the channel response of a channel between at least one transmitting peer and at least one receiving peer, ~~said~~the method comprising transmitting  $N_U$  reference tones from ~~said~~the transmitting peer to ~~said~~the receiving peer; capturing ~~said~~the  $N_U$  reference tones at ~~said~~the receiving peer; and determining at ~~said~~the receiving peer from ~~said~~the  $N_U$  reference tones ~~said~~the maximum likelihood frequency domain estimate of ~~said~~the channel response at  $N_F$  predetermined frequencies by directly exploiting the finiteness of the time response of ~~said~~the channel.